



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2021-0457; Project Identifier AD-2020-01461-T]

RIN 2120-AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 787-8, 787-9, and 787-10 airplanes. This proposed AD was prompted by a report that during a fleet sampling inspection, cracks were found on the inner cylinder pivot pins of the left and right main landing gear (MLG) on one of the airplanes. This proposed AD would require repetitive lubrications of the left and right MLG truck beam and inner cylinder pivot joint, reviewing the maintenance program documentation to verify certain lubrication tasks are incorporated, doing repetitive inspections of the MLG inner cylinder pivot pins and inner cylinder bushings of the MLG truck beam and inner cylinder joint for any friction, heat damage, excessive wear, cracking and smearing of bushing material, and applicable on-condition actions. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: 202-493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available on the Internet at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0457.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0457; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Allen Rauschendorfer, Senior Aerospace Engineer, Airframe Section, FAA, Seattle ACO Branch, 2200 South 216th St.,

Des Moines, WA 98198; phone and fax: 206-231-3528; email:

allen.rauschendorfer@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2021-0457; Project Identifier AD-2020-01461-T” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Allen

Rauschendorfer, Senior Aerospace Engineer, Airframe Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3528; email: allen.rauschendorfer@faa.gov. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA has received a report indicating that during a fleet sampling inspection, cracks were found on the inner cylinder pivot pins of the left and right MLG on one of the airplanes. The pins exhibited cracking of the high velocity oxygen fuel (HVOF) tungsten carbide-cobalt-chrome coating. Removal of the outer diameter coating disclosed cracking of the custom 465 CRES substrate. The cause of the cracking was determined to be heat damage due to in-service friction. This condition, if not addressed, could result in a fractured pivot pin, which could lead to loss of all or part of the pivot pin assembly, and subsequent collapse of the MLG and reduced controllability of the airplane during takeoff and landing.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Related Service Information under 1 CFR Part 51

The FAA reviewed Boeing Alert Requirements Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020. This service information specifies procedures for repetitive lubrication of the left and right MLG truck beam and inner cylinder pivot joint with MIL-PRF-32014 grease, reviewing the maintenance program documentation to verify that it includes lubrication tasks for the left and right MLG truck beam and inner cylinder pivot joint with MIL-PRF-32014 grease, repetitive detailed and fluorescent penetrant inspections (FPI) of the left and right MLG pivot pin outer diameter (OD)

surface for any friction and heat damage, repetitive detailed inspections of the left and right MLG inner cylinder bushing inner diameter (ID) surface for any excessive wear, cracking and smearing of bushing material, and applicable on-condition actions.

On-condition actions include updating the maintenance program to incorporate lubrication tasks for the left and right MLG truck beam and inner cylinder pivot joint with MIL-PRF-32014 grease, detailed and FPI inspections on the inner cylinder lug bore for any heat and friction damage, installing a new pivot pin, applying lubrication using MIL-PRF-32014 grease and making sure lubrication passages are clear, installing new aluminum-nickel-bronze inner cylinder bushings, installing new copper-nickel-tin inner cylinder bushings, and repair.

The service information also specifies terminating actions for the repetitive inspections. The terminating actions include the installation of certain parts and incorporation of the lubrications tasks into the maintenance program.

The FAA also reviewed Boeing 787 Certification Maintenance Requirements (CMRs), D011Z009-03-03, dated June 2020. This service information specifies procedures for, among other actions, for CMR item number 32-CMR-01, to lubricate the main landing gear truck beam pivot joint.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

Proposed AD Requirements in this NPRM

This proposed AD would require accomplishing the actions specified in the service information already described except for any differences identified as exceptions in the regulatory text of this proposed AD. For information on the procedures and compliance times, see this service information at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0457.

Boeing Alert Requirements Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020, specifies updating the maintenance program to incorporate lubrication tasks for the left and right MLG truck beam and inner cylinder pivot joint with MIL-PRF-32014 grease. Operators have different methods of updating the maintenance program. If operators want to terminate the repetitive lubrications required by paragraph (g) of this AD, only revising the maintenance or inspection program, as applicable, to incorporate CMR item number 32-CMR-01 of Section G, “Certification Maintenance Requirement Task,” of Boeing 787 Certification Maintenance Requirements (CMRs), D011Z009-03-03, dated June 2020, is terminating action.

This proposed AD includes an optional action that would include revisions to certain operator maintenance documents to include new actions (e.g., inspections). Compliance with these actions is required by 14 CFR 91.403(c). For airplanes that have been previously modified, altered, or repaired in the areas addressed by this proposed AD, the operator may not be able to accomplish the actions described in the revisions. In this situation, to comply with 14 CFR 91.403(c), the operator must request approval for an alternative method of compliance according to paragraph (l) of this proposed AD.

Explanation of Requirements Bulletin

The FAA worked in conjunction with industry, under the Airworthiness Directive Implementation Aviation Rulemaking Committee (AD ARC), to enhance the AD system. One enhancement is a process for annotating which steps in the service information are “required for compliance” (RC) with an AD. Boeing has implemented this RC concept into Boeing service bulletins.

In an effort to further improve the quality of ADs and AD-related Boeing service information, a joint process improvement initiative was worked between the FAA and Boeing. The initiative resulted in the development of a new process in which the service information more clearly identifies the actions needed to address the unsafe condition in

the “Accomplishment Instructions.” The new process results in a Boeing Requirements Bulletin, which contains only the actions needed to address the unsafe condition (i.e., only the RC actions).

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 131 airplanes of U.S. registry. The FAA estimates the following costs to comply with this proposed AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Repetitive lubrications	1 work-hour X \$85 per hour = \$85 per lubrication cycle	\$0	\$85 per lubrication cycle	\$11,135 per lubrication cycle
Verification of lubrication tasks	1 work-hour X \$85 per hour = \$85	\$0	\$85	\$11,135
Repetitive inspections	40 work-hours X \$85 per hour = \$3,400 per inspection cycle	\$0	\$3,400 per inspection cycle	\$445,400 per inspection cycle

The FAA estimates the following costs to do any necessary on-condition actions that would be required based on the results of the proposed inspection. The agency has no way of determining the number of aircraft that might need these on-condition actions:

On-condition costs

Action	Labor cost	Parts cost	Cost per product
Installation of new pivot pin	8 work-hours X \$85 per hour = \$680	\$97,517 per pivot pin component assembly	\$98,197
Installation of new bushings	1 work-hour X \$85 per hour = \$85	\$5,968 per bushing	\$6,053
Lubrication and making sure lubrication passages are clear	1 work-hour X \$85 per hour = \$85	\$0	\$85

Action	Labor cost	Parts cost	Cost per product
Detailed and FPI inspections on the inner cylinder lug bore	2 work-hour X \$85 per hour = \$170	\$0	\$170
Update lubrication tasks (except for CMR item number 32-CMR-01 incorporation)	1 work-hour X \$85 per hour = \$85	\$0	\$85

The FAA has received no definitive data on which to base the cost estimates for the on-condition repairs specified in this proposed AD.

For the optional action to revise the maintenance or inspection program by incorporating CMR item number 32-CMR-01, as applicable, the FAA has determined that revising the existing maintenance or inspection program takes an average of 90 work-hours per operator, although the agency recognizes that this number may vary from operator to operator. In the past, the FAA has estimated that this action takes 1 work-hour per airplane. Since operators incorporate maintenance or inspection program changes for their affected fleet(s), the FAA has determined that a per-operator estimate is more accurate than a per-airplane estimate. Therefore, the FAA estimates the average total cost per operator to be \$7,650 (90 work-hours x \$85 per work-hour).

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some or all of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected operators.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress

charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Would not affect intrastate aviation in Alaska, and
- (3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

The Boeing Company: Docket No. FAA-2021-0457; Project Identifier AD-2020-01461-

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(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) by
[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL
REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 787-8, 787-9, and 787-10
airplanes, certificated in any category, as identified in Boeing Alert Requirements
Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020.

(d) Subject

Air Transport Association (ATA) of America Code 32, Main landing gear.

(e) Unsafe Condition

This AD was prompted by a report that during a fleet sampling inspection, cracks
were found on the inner cylinder pivot pins of the left and right main landing gear (MLG)
on one of the airplanes. The FAA is issuing this AD to address any heat damage and
cracking to the MLG inner cylinder pivot pin, which could result in a fractured pivot pin
and lead to loss of all or part of the pivot pin assembly, and subsequent collapse of the
MLG and reduced controllability of the airplane during takeoff and landing.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

Except as specified by paragraph (h) of this AD: At the applicable times specified
in the “Compliance” paragraph of Boeing Alert Requirements Bulletin B787-81205-
SB320045-00 RB, Issue 001, dated November 9, 2020, do all applicable actions

identified in, and in accordance with, the Accomplishment Instructions of Boeing Alert Requirements Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020. Actions identified as terminating action in Boeing Alert Requirements Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020, terminate the applicable required actions of this AD, provided the terminating action is done in accordance with the Accomplishment Instructions of Boeing Alert Requirements Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020.

Note 1 to paragraph (g): Guidance for accomplishing the actions required by this AD can be found in Boeing Alert Service Bulletin B787-81205-SB320045-00, Issue 001, dated November 9, 2020, which is referred to in Boeing Alert Requirements Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020.

(h) Exceptions to Service Information Specifications

(1) Where Boeing Alert Requirements Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020, uses the phrase “the Issue 001 date of Requirements Bulletin B787-81205-SB320045-00 RB,” this AD requires using “the effective date of this AD.”

(2) Where Boeing Alert Requirements Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020, specifies contacting Boeing for repair instructions: This AD requires doing the repair using a method approved in accordance with the procedures specified in paragraph (l) of this AD.

(3) Where the action for “CONDITION 2” in Table 7 of the “Compliance” paragraph of Boeing Alert Requirements Bulletin B787-81205-SB320045-00 RB, Issue 001, dated November 9, 2020, specifies “Do a detailed FPI inspection of the inner cylinder lug bore for heat and friction damage,” for this AD, the action is “Do a detailed and FPI inspection on the inner cylinder lug bore for heat and friction damage.”

(i) Optional Terminating Action

Revising the existing maintenance or inspection program, as applicable, to incorporate the information in CMR item number 32-CMR-01 of Section G, “Certification Maintenance Requirement Task,” of Boeing 787 Certification Maintenance Requirements (CMRs), D011Z009-03-03, dated June 2020, terminates the repetitive lubrications required by paragraph (g) of this AD.

(j) No Alternative Actions and Intervals

After the existing maintenance or inspection program has been revised as required by paragraph (i) of this AD, no alternative actions (e.g., inspections) and intervals may be used unless the actions and intervals are approved as an alternative method of compliance (AMOC) in accordance with the procedures specified in paragraph (l) of this AD.

(k) Parts Installation Prohibition

At the applicable time specified in paragraph (k)(1) or (2) of this AD, do not install an aluminum-nickel-bronze inner cylinder bushing on a MLG inner cylinder on any airplane.

(1) For airplanes with aluminum-nickel-bronze inner cylinder bushings installed on a MLG inner cylinder as of the effective date of this AD: After the bushing has been replaced with a copper-nickel-tin inner cylinder bushing.

(2) For airplanes with copper-nickel-tin inner cylinder bushings installed on a MLG inner cylinder as of the effective date of this AD: As of the effective date of this AD.

(l) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in

Related Information. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(m) Related Information

(1) For more information about this AD, contact Allen Rauschendorfer, Senior Aerospace Engineer, Airframe Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3528; email: allen.rauschendorfer@faa.gov.

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

Issued on June 6, 2021.

Lance T. Gant, Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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